

lands. Jackson, 7th, entire portion of state between this point and Covington submerged, all communication cut off, loss of property without precedent; no such flood since the settlement of the country. Plattsburgh, 23rd, all bottom lands under water to a depth of six to eight feet, farmers on Iowa side have abandoned their houses and report heavy losses of cattle. Pacific Junction, 23rd, town submerged to a depth of four to eight feet; great suffering and much loss of property. Omaha, 8th, river 21 feet above low-water mark, highest ever known here and $2\frac{1}{2}$ feet higher than the April flood of 1875 or the June flood of 1867; everything on the levee submerged and the low lands on the east side of the river flooded for miles; river three miles wide opposite the city and filled to a considerable extent with floating ice; twelve of the largest buildings of the U. P. R. R. Co.'s shops were flooded to a depth of six to twelve inches and 1,300 men temporarily thrown out of employment. 9th, river opposite city increased to a width of six miles; damage to property immense. 20th, water 20 feet above low-water mark; all the bottoms again submerged; railroad business entirely suspended, shops and depots flooded. 22nd, water 22 feet 10 inches above low water mark and rising at the rate of one inch per hour; all railroad connections severed; Union stock yards flooded; 300,000 feet of lumber carried away; Elkhorn river overflowed, railroad partially carried away. 23rd, 2 p. m., river 23 feet and 4 inches above low-water mark, or 16 inches higher than ever before recorded; all passengers going east compelled to pass to the local depots in boats; \$30,000 worth of lumber carried away. 24th, water 4 feet higher than the flood of 1867; current very rapid; all railroad tracks washed away. 29th, water still rising; 50,000 feet of lumber carried away; the Union Pacific R. R. shops, smelting works, Willow Springs distillery and several large warehouses flooded. *Texas*.—Huntsville, 22nd, heaviest storm of rain ever known here; surrounding country flooded; all bridges carried away; crops seriously damaged. *Wisconsin*.—Beloit, 20th, town partially inundated; great loss to mill property. Fort Atkinson, 20th, all the low lands flooded; ice came down in huge masses, crushing bridges, dams and every obstacle in its path; water rose to within a few inches of the top piers of the city bridge; highest ever known. Milwaukee, 21st, flood, highest and most destructive ever known here; basements along the docks and several lumber yards and tanneries submerged. At West Bend, Thevisville, Newburg and other neighboring places all dams and bridges gone.

TEMPERATURE OF WATER.

The temperature of water, as observed in rivers and harbors at Signal Service stations, with the average depth at which observations were taken, is given in the table on the left hand side of chart No. III. Owing to ice, breakage of instruments and opening of new stations, observations are wanting as follows: Atlantic City, 1st to 20th; Alpena, 1st to 17th; Boston, 1st to 21st; Burlington, Vt., 1st to 20th; Cleveland, 1st to 18th; Chicago, 1st to 11th; Detroit, 1st to 5th, 15th and 16th; Duluth, 1st to 26th; Escanaba, 1st to 31st; Grand Haven, 1st to 7th; Marquette, 1st to 31st; Milwaukee, 1st to 25th; Newport, 1st to 24th; New Haven, 1st to 22nd; New Shoreham, 1st to 16th; Port Eads, 1st to 9th; Sandusky, 1st to 10th.

ATMOSPHERIC ELECTRICITY.

Auroras.—There have been an unusual number of displays reported from the Lake region. Most of them occurred on dates coincident with those in other districts to the east and west, thus completing the connection which frequently has been wanting over this region, from one cause or another, generally presumed to be cloudiness and therefore frustrating any attempt to trace a continuous line of observation from east to west, which, from the nature of auroral display is known to be its ordinary disposition. The most important display, where the continuity of observation was unbroken, occurred on the 27th and extended from Mt. Washington to stations in Oregon and Washington Territory and as far south as latitude 38° , seventeen intervening stations reporting. The following were less extended displays but generally visible from New England westward to the Mississippi. 17th, from northern Vermont to northern Indiana and south to latitude 41° , two intervening stations reporting. 18th, from Mt. Washington to Madison, Wis., and south to latitude 43° , seven intervening stations reporting. 19th, from Halifax, N. S., to Escanaba and as far south as latitude 42° , six intervening stations reporting. 20th, from Sydney, Cape Breton Island, to Fort Stevenson, Dak., and southward to latitude 38° , twenty-seven intervening stations reporting. 21st, from Buffalo to Fort Stevenson, Dak., and southward to latitude 43° , two intervening stations reporting. 24th, from Eastport, Me., to Spiritwood, Dak., and southward to latitude 45° , three intervening stations reporting. 28th, from Halifax, N. S., to Spiritwood, Dak., and southward to latitude 40° , fifteen intervening stations reporting. 30th, from Catawissa, Pa., to Vevay, Ind., and southward to latitude 39° , one intervening station reporting. The following were local displays: Williamstown, Mass., 3rd, 8:30 p. m., faint; Burlington, Vt., 4th, 9 to 11 p. m.; Albany, 1st, 11 p. m. to midnight; Duluth, 1st, until 3 a. m.; St. Vincent, Minn., 3rd; Ft. Brady, Mich., 1st, 9 p. m., faint; Eola, Or., 15th, p. m., very faint.

MISCELLANEOUS PHENOMENA.

Sunsets.—The characteristics of the sky at sunset, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from 177 stations

show 5,281 observations to have been made, of which 36 were reported doubtful; of the remainder 4,479, or 85.4 per cent. were followed by the expected weather.

Earthquakes.—Ischia, Island of Ischia, Mediterranean Sea, *March* 4th, 1881, during the afternoon very violent shock, lasting seven seconds and accompanied by a noise like subterranean thunder, followed immediately by the crash of falling houses. Two hundred houses were thrown down and many others damaged or made uninhabitable; total number of persons killed and wounded, 312. At Amenes, a smaller city on the same island, thirteen houses were destroyed and five people killed. It was at first supposed that this disaster was due to some influence connected with an eruption of Mt. Vesuvius, which occurred the day previous, but more deliberate judgment inclined to the belief that the shock was caused by the continual working of mineral waters through into a subterranean corrison. Near the centre of the island is situated Mount San Nicolo or Epomeo, an extinct volcano rising to the height of about 2,600 feet, from which Ischia, the capital city, has suffered severely in past years by frequent eruptions. Rio Vista, Cal., April 10th, 2 a. m., slight shock. Sacramento, 10th, 2 p. m., direction W. to E., three separate and distinct shocks, following each other in rapid succession. San Francisco, 10th, 2:5 a. m., oscillation from N. to S., duration of shock about two seconds. Los Angeles, 27th, 9:10 p. m., direction from SW. to NE., duration two seconds. Visalia, 10th, 2:02 a. m., direction N. to S., duration two seconds. Yosemite valley, Cal., 10th, 1:53 a. m., wave from NW. to SE., slight tremulous motion. Oakland, Cal., 10th, 2 a. m., shock, accompanied by a rattling noise sufficient to awaken inhabitants. Antrim, N. H., 3rd, at 4:52 a. m., only one shock, sounding like snow-slide from roof of house. U. S. steamer *Galena* reports, as follows: "During our stay at Kastro, Island of Scio, frequent slight shocks of earthquake were plainly felt on board. They were of two kinds—one a rumbling sound, with tremulous motion of ship; the other, a distinct motion of the vessel, accompanied by a report like a distant mining blast. At 7:15 p. m., April 11th, a heavy shock was felt, shaking the ship violently; it was followed by the sound of falling walls ashore and the roar of human voices. A great white cloud of dust rose over the city and gradually settled out of sight.

Sun Spots.—The following record of observations, made by Mr. D. P. Todd, Assistant, has been forwarded by Prof. S. Newcomb, U. S. Navy, Superintendent Nautical Almanac Office, Washington, D. C.:

DATE— April, 1881.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		REMARKS.
	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	
2, 9 a. m.....	1	5	0	0	1	1	3	10	Few faculae.
3, 10 a. m.....	2	11	1	1	1	2	4	20†	
5, 8 a. m.....	0	0	0	0	0	0	4	20†	Faculae.
6, 7 a. m.....	1	3	0	0	1	3	5	15†	Faculae.
7, 7 a. m.....	1	3	1	5	1	3	4	14	Faculae.
10, 10 a. m.....	0	3	0	0	0	3	3	8	Faculae.
11, 8 a. m.....	0	0	0	0	0	0	2	7	Faculae.
14, 8 a. m.....	2	15	0	0	0	0	3	20†	Faculae.
15, 5 a. m.....	0	20†	0	0	0	0	3	40†	Faculae. Many of the spots small.
17, 7 a. m.....	4	15	0	0	3	10	7	55†	Faculae. Many of the spots small.
21, 9 a. m.....	0	60†	0	0	0	0	6	115†	Faculae. Many of the spots small.
23, 7 a. m.....	0	0	1	20†	0	0	4	55†	Faculae. Many of the spots small. Spots probably disappeared by solar rotation.
24, 9 a. m.....	0	0	1	10	0	0	3	60†	Faculae. Many of the spots small.
26, 8 a. m.....	1	5	0	10	0	0	4	55†	
28, 7 a. m.....	0	0	2	45†	0	0	3	10	Faculae.
8 a. m.....	0	0	0	0	0	0	3	10	
30, 9 a. m.....	1	4	2	9	1	4	2	5	Faculae.

† Approximated.

Mr. H. D. Govey, at North Lewisburg, Ohio, reports: observed sun spots on all clear days during the month.

PUBLISHED BY ORDER OF THE SECRETARY OF WAR.

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